

WHAT WE CLAIM IS:

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1. A fuel blend for use in an internal combustion engine, the fuel blend comprising:
- 5 an oxygen-containing component capable of providing oxygen for combustion of the fuel component under conditions prevailing during the combustion cycle of the internal combustion engine;
- wherein the major oxygen-providing agent of the oxygen-containing component is one or more compounds having the general formula (I):



wherein R_1 is selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups;

15 R_2 is selected from lower alkyl, lower alkenyl and lower alkynyl groups, or a group having the general formula (II):



20 wherein R_3 is selected from lower alkyl, lower alkenyl and lower alkynyl groups; and

R_4 is selected from lower alkyl groups.

2. A fuel blend as claimed in claim 1, wherein R_1 is selected from hydrogen, C_1 or C_2 alkyl, C_2 alkenyl and C_2 alkynyl groups.

3. A fuel blend as claimed in claim 2, wherein R_1 is selected from hydrogen, C_1 or C_2 alkyl.

4. A fuel blend as claimed in claim 3, wherein R_1 is methyl.
5. A fuel blend as claimed in claim 3, wherein R_1 is ethyl.
- 5 6. A fuel blend as claimed in claim 1, wherein R_2 is selected from C_1 to C_4 alkyl, C_2 alkenyl and C_2 alkynyl groups.
7. A fuel blend as claimed in claim 6, wherein R_2 is C_1 or C_2 alkyl.
- 10 8. A fuel blend as claimed in claim 7, wherein R_2 is methyl.
9. A fuel blend as claimed in claim 7, wherein R_2 is ethyl.
- 15 10. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is methyl acetate.
11. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is ethyl acetate.
- 20 12. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is methyl formate.
13. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is ethyl formate.
- 25 14. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is tertiary butyl acetate.

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15. A fuel blend as claimed in claim 1, wherein R_2 is a group of general formula (II), in which R_3 is a C_1 to C_4 alkyl.

16. A fuel blend as claimed in claim 15, wherein R_4 is a C_1 to C_4 alkyl.

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17. A fuel blend as claimed in claim 14, wherein R_3 and R_4 are each independently selected from C_1 or C_2 alkyl.

18. A fuel blend as claimed in claim 1 in which the compound of general formula (I) is ethylene glycol diacetate.

19. A fuel blend as claimed in claim 1, wherein the hydrocarbon-containing fuel component is selected from the group consisting of diesel and gasoline.

20. A fuel blend as claimed in claim 1, wherein the major oxygen-providing component comprises a first compound of formula (I), in which R_2 is ethyl, and a second compound of formula (I), in which R_2 is methyl.

21. A fuel blend as claimed in claim 20, wherein both the first and second compounds are compounds in which R_1 is a C_1 to C_4 alkyl.

22. A fuel blend as claimed in claim 21, wherein the first compound and the second compound are present in a ratio of from 1:5 to 5:1.

23. A fuel blend as claimed in claim 21, wherein the first compound and the second compound are present in a ratio of from 1:1 to 1:1.5.

24. A fuel blend as claimed in claim 23, wherein the first compound is methyl acetate and the second compound is ethyl acetate.

25. A fuel blend as claimed in claim 1, wherein the major oxygen-providing component comprises a first compound of formula (I), in which R_2 is a group of general formula (II), and a second compound of formula (I), in which R_2 is a C_1 to C_4 alkyl.

26. A fuel blend as claimed in claim 25, wherein the first compound is a compound in which R_1 is a C_1 to C_4 alkyl.

27. A fuel blend as claimed in claim 26, wherein the second compound is a compound in which R_1 is a C_1 to C_4 alkyl.

28. A fuel blend as claimed in claim 27, wherein the first compound is ethylene glycol diacetate.

29. A fuel blend as claimed in claim 28, wherein the second compound is selected from methyl acetate, ethyl acetate and mixtures thereof.

30. A fuel blend as claimed in claim 25, wherein the first compound and second compound are present in a ratio of from 0.5:1 to 10:1.

31. A fuel blend as claimed in claim 30, wherein the first compound and second compound are present in a ratio of from 1:1 to 5:1.

32. A fuel blend as claimed in claim 1, further comprising a stabilizer.

33. A fuel blend as claimed in claim 32, wherein the stabilizer is selected from alcohols having from 1 to 8 carbon atoms.

34. A fuel blend as claimed in claim 33, wherein the stabilizer is selected from alcohols having from 2 to 5 carbon atoms.

35. A fuel blend as claimed in claim 34, wherein the stabilizer is ethanol.

36. A fuel blend as claimed in claim 32, wherein the compound of general formula (I) and the stabilizer are present in a ratio of from 20:1 to 150:1.

37. A fuel blend as claimed in claim 36, wherein the compound of general formula (I) and the stabilizer are present in a ratio of from 75:1 to 125:1.

38. A fuel blend as claimed in claim 1, further comprising an alcohol having from 2 to 5 carbon atoms and bearing one or more alkyl substituents.

39. A fuel blend as claimed in claim 38, wherein the alcohol is an alkyl substituted butyl alcohol.

40. A fuel blend as claimed in claim 39, wherein the alcohol is tertiary butyl alcohol.

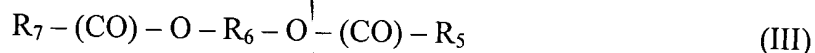
41. A fuel blend as claimed in claim 38, wherein the alcohol and the compound of general formula (I) are present in a ratio of from 1:0.6 to 1:5.

42. A fuel blend as claimed in claim 1, further comprising a biocide.

43. A fuel blend as claimed in claim 1, wherein the hydrocarbon-containing fuel component is gasoline and the compound of general formula (I) is present in an amount sufficient to provide an oxygen-content in the fuel blend of 1 to 5 percent by weight.

44. A fuel blend as claimed in claim 1, wherein the hydrocarbon-containing fuel component is diesel and the compound of general formula (I) is present in an amount sufficient to provide an oxygen-content in the fuel blend of 1 to 10 percent by weight.

- 5 45. An oxygenating additive for a hydrocarbon-containing fuel comprising:
a first compound having a general formula (III):



wherein R_5 is selected from lower alkyl, lower alkenyl and lower alkynyl groups;

R_6 is selected from lower alkyl; and

wherein R_7 is selected from lower alkyl, lower alkenyl and lower alkynyl groups;

and

a second compound having a general formula (IV):



wherein R_8 is selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups; and

R_9 is selected from lower alkyl, lower alkenyl and lower alkynyl groups.

46. An oxygenating additive as claimed in claim 45, wherein R_5 is selected from C_1 to C_4 alkyl.

25 47. An oxygenating additive as claimed in claim 46, wherein R_5 is methyl.

48. An oxygenating additive as claimed in claim 45, wherein R_6 is ethyl.

49. An oxygenating additive as claimed in claim 45, wherein R_7 is selected from C_1 to C_4 alkyl.

50. An oxygenating additive as claimed in claim 49, wherein R_7 is methyl.

51. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (III) is ethylene glycol diacetate.

52. An oxygenating additive as claimed in claim 45, wherein R_8 is selected from hydrogen, and C_1 to C_4 alkyl.

53. An oxygenating additive as claimed in claim 52, wherein R_8 is methyl.

54. An oxygenating additive as claimed in claim 45, wherein R_9 is selected from C_1 to C_4 alkyl.

55. An oxygenating additive as claimed in claim 54, wherein R_9 is selected from methyl and ethyl.

56. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (IV) is selected from methyl acetate and ethyl acetate and mixtures thereof.

57. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (III) and the compound of general formula (IV) are present in a ratio of from 0.5:1 to 5:1.

58. An oxygenating additive as claimed in claim 57, wherein the compound of general formula (III) and the compound of general formula (IV) are present in a ratio of from 1:1 to 2.5:1.

59. An oxygenating additive as claimed in claim 45, further comprising a biocide.

60. An oxygenating additive as claimed in claim 45, further comprising a stabilizer.

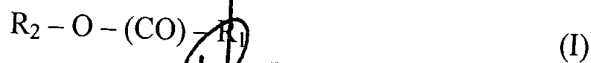
61. An oxygenating additive as claimed in claim 60, wherein the stabilizer is selected from alcohols having from 2 to 5 carbon atoms.

62. An oxygenating additive as claimed in claim 61, wherein the stabilizer is ethanol.

63. An oxygenating additive as claimed in claim 60, wherein the ratio of the combined amounts of the compounds of general formulae (III) and (IV) to the stabilizer is from 20:1 to 150:1.

64. An oxygenating additive as claimed in claim 63, wherein the ratio of the combined amounts of the compounds of general formulae (III) and (IV) to the stabilizer is from 75:1 to 125:1.

65. An oxygenating additive for a hydrocarbon fuel comprising a first and a second compound, both the first and the second compounds having the general formula (I):



wherein R_1 in each of the first and the second compound is independently selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups; and

R_2 in each of the first and second compound is independently selected from lower alkyl, lower alkenyl and lower alkynyl groups.

5 66. An oxygenating additive as claimed in claim 65, wherein R_1 and R_2 in each of the first and second compounds are both independently selected from hydrogen, and lower alkyl groups.

10 67. An oxygenating additive as claimed in claim 66, wherein the first compound is methyl acetate and the second compound is ethyl acetate.

68. An oxygenating additive as claimed in claim 67, wherein methyl acetate and ethyl acetate are present in a ratio of from 1:2 to 2:1.

15 69. An oxygenating additive as claimed in claim 68, wherein methyl acetate and ethyl acetate are present in a ratio of 1:1.

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